

# Airline Passenger Satisfaction

By: Michael Holthouser

# Overview

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# Business Understanding

- **Stakeholder:**

- Explorer Airlines

- **Business Problem:**

- Explorer Airlines has tasked me to provide prediction analysis on their passenger's satisfaction levels.

- **Business Question:**

- What key features do passengers find most important while traveling?



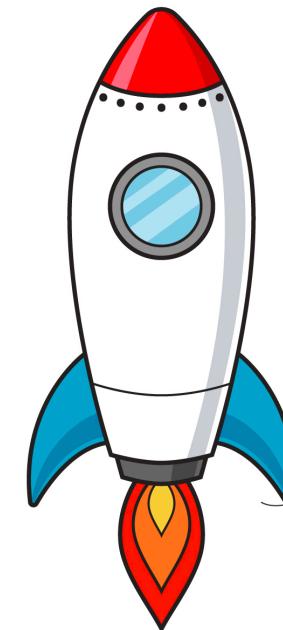
# Data Understanding

- **Gender:** male or female
- **Customer type:** regular or non-regular airline customer
- **Type of travel:** the purpose of the passenger's flight (personal or business travel)
- **Class:** business, economy, economy plus
- **Flight distance:** The flight distance of this journey
- **Inflight wifi service:** satisfaction level with Wi-Fi service on board (1-5)
- **Ease of Online booking:** online booking satisfaction rate (1-5)
- **Food and drink:** food and drink satisfaction level (1-5)
- **Online boarding:** satisfaction level with online boarding (1-5)
- **Seat comfort:** seat satisfaction level (1-5)
- **Inflight entertainment:** satisfaction with inflight entertainment (1-5)
- **On-board service:** level of satisfaction with on-board service (1-5)
- **Leg room service:** level of satisfaction with leg room service (1-5)
- **Baggage handling:** level of satisfaction with baggage handling (1-5)
- **Checkin service:** level of satisfaction with checkin service (1-5)
- **Inflight service:** level of satisfaction with inflight service (1-5)
- **Cleanliness:** level of satisfaction with cleanliness (1-5)
- **Satisfaction:** Airline satisfaction level(Satisfaction, neutral or dissatisfaction).



# Modeling

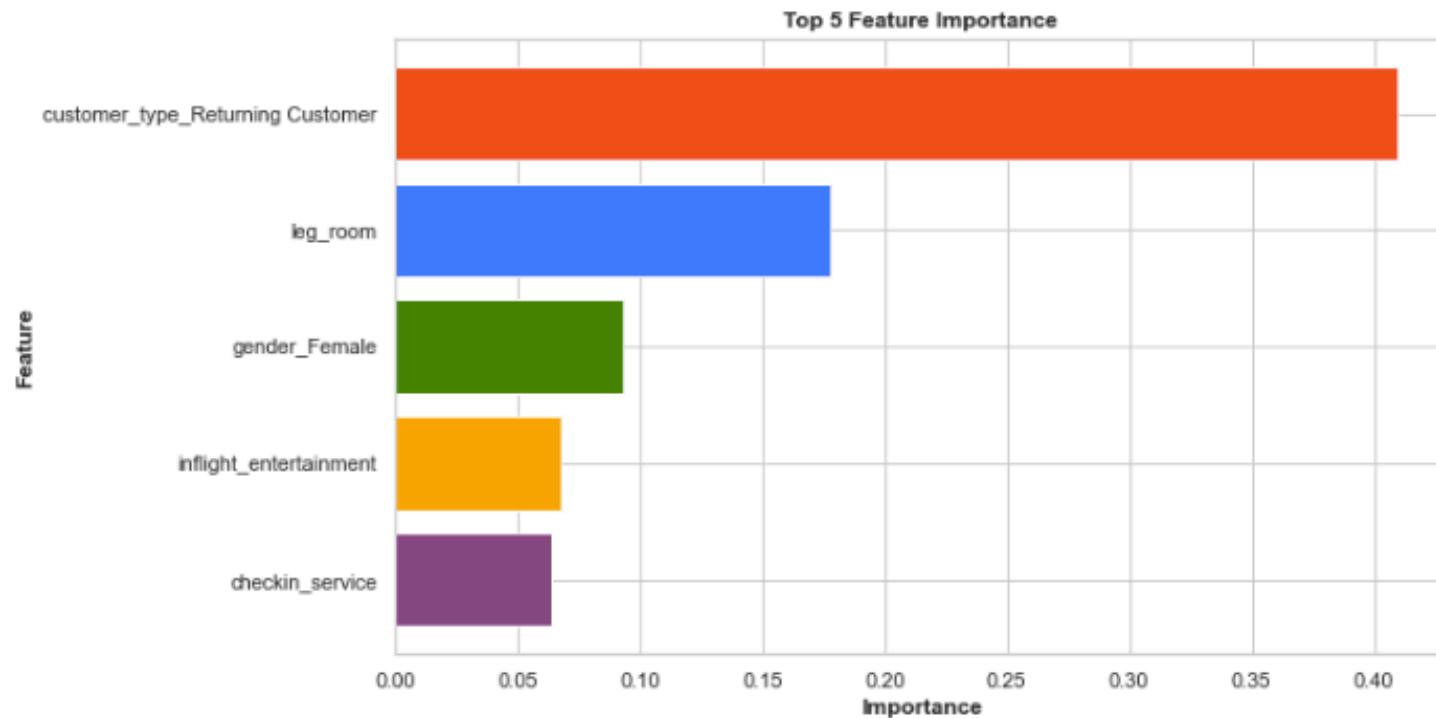
- Best Model: XGBoost Classifier
  - 96% F1-Score – Neutral or Dissatisfied
  - 97% F1-Score – Satisfied
  - AUC = 96%
- Evaluation Metric:
  - F1-Score is the harmonic mean of recall and precision.
  - AUC tells how well the model performs.
- Important Features:
  - Customer type: Returning customer
  - Leg room
  - Gender female
  - Inflight entertainment
  - Check-in service



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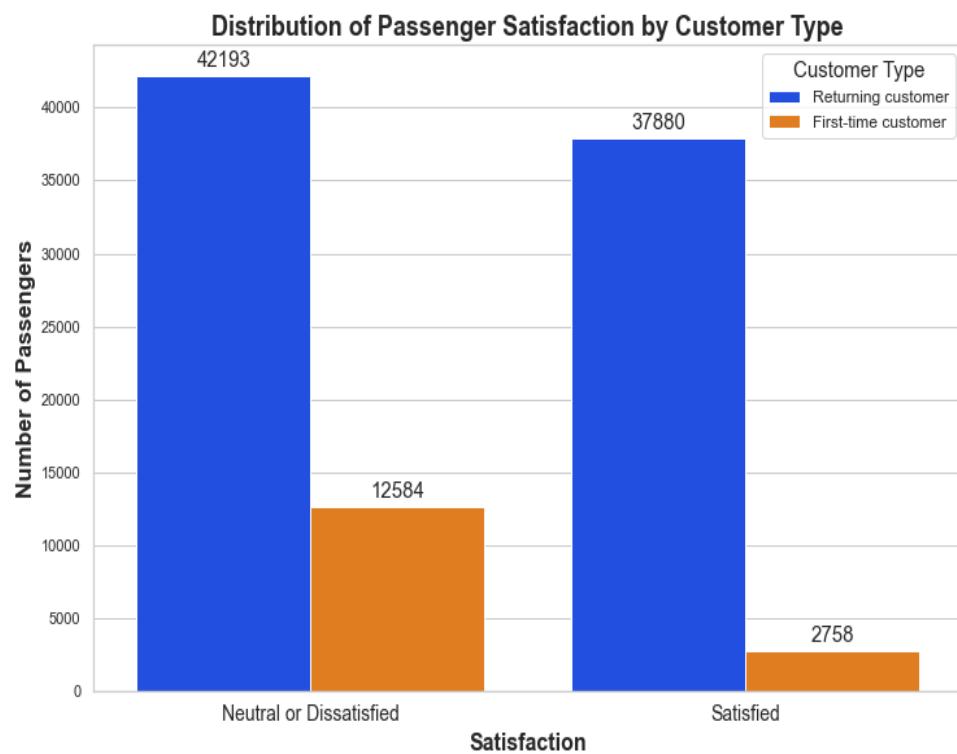
# Important Features

- Top 5 Important Features:



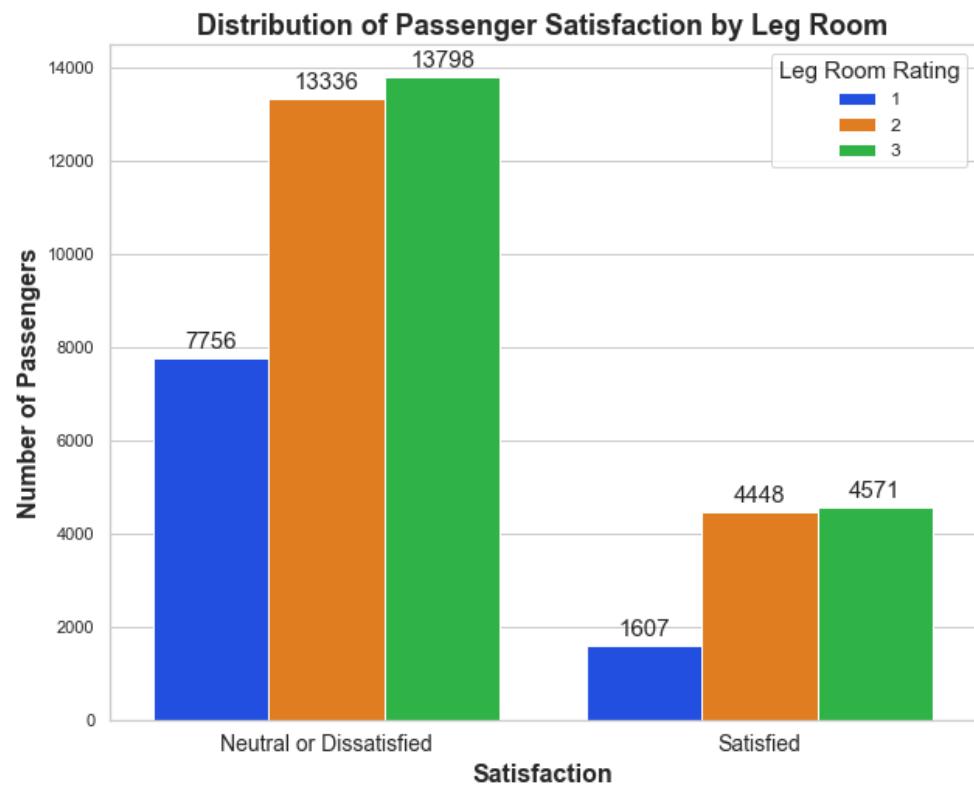
# Returning Customers

- There were significantly more returning customers than first-time customers in the dataset.
- **Recommendations:**
  - Offer loyalty programs or rewards.
  - Offer special perks or benefits.
  - Provide personalized experiences.



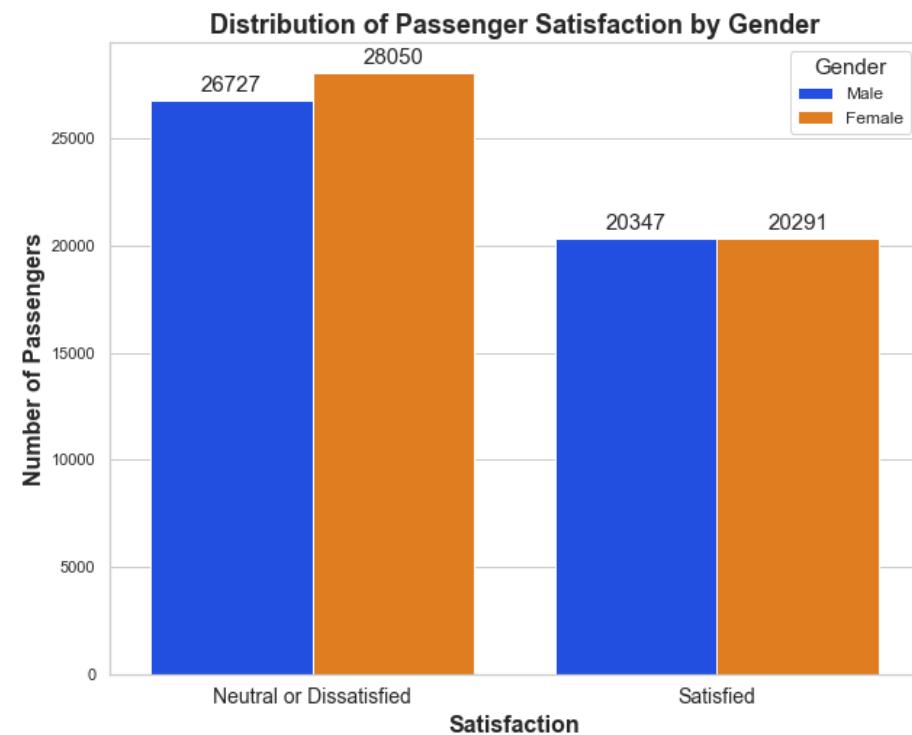
# Leg Room

- Uncomfortable seats mean unhappy passengers.
- Recommendations:
  - Increase leg room
    - Comfortable experience
    - Customer loyalty
    - Repeat business



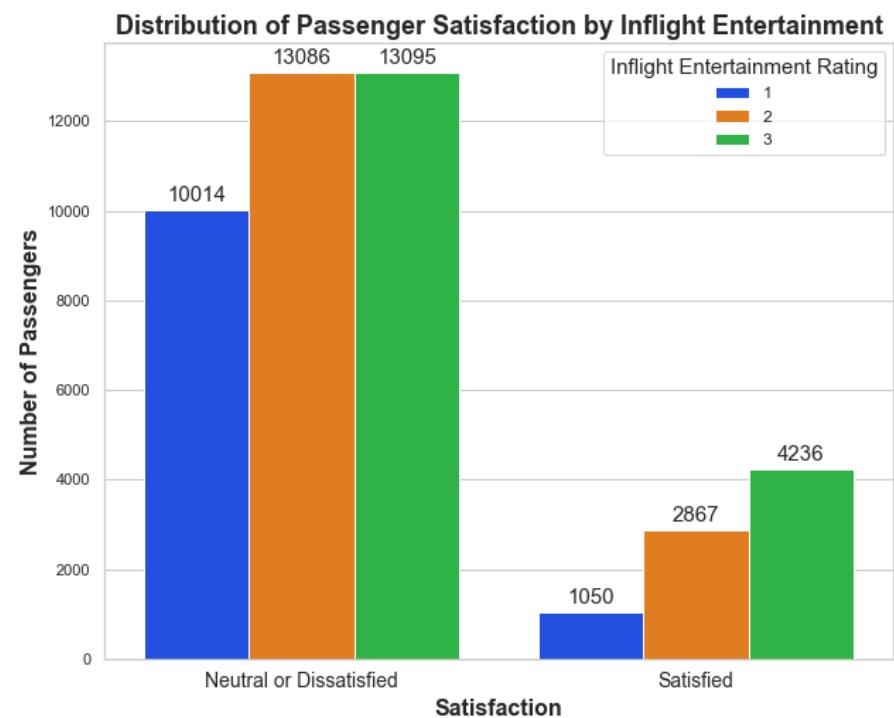
# Gender Female

- The female gender is more impactful than the male gender for this model.
- There are more females than males in this dataset.
- **Recommendations:**
  - Inclusive and welcoming services to all genders
  - address biases in the dataset
  - Dive deeper into unique concerns or needs that females may have.



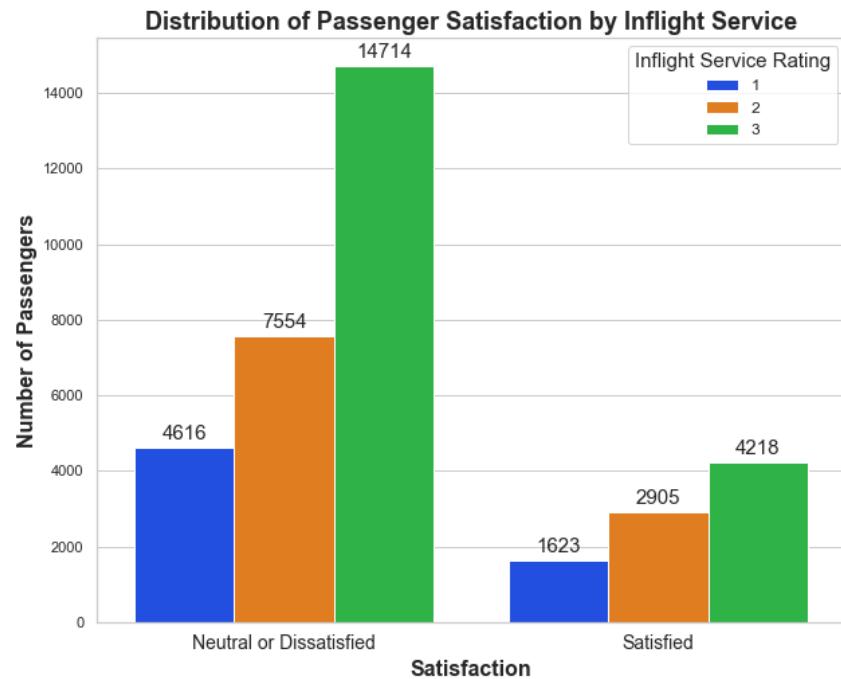
# Inflight Entertainment

- Poor inflight entertainment will cause passengers to leave neutral or dissatisfied.
- **Recommendations:**
  - Charging ports for every seat.
  - Multilingual content.
  - Updating the selection of movies and tv shows frequently.
  - User-friendly entertainment app.
  - Personalized experience.



# Check-in Service

- Passengers that are unhappy and frustrated with the check-in service are likely to be dissatisfied.
- **Recommendations:**
  - Make online check-in service more user friendly.
  - Improve staff training.
  - Staff accordingly.
  - Add more self-service kiosks.



## Future Work

- After adjustments have been made from the recommendations provided, perform another analysis to see if customer satisfaction has improved.
- Try different models with different tuning techniques to see if they perform better.
- Collect additional data: The dataset used in this analysis only includes a single airline. Collecting data from multiple airlines may provide more insights and make the results more generalizable.

# Thank you

Michael Holthouser

✉ Mholthouser.co@gmail.com

🔗 <https://github.com/MHolthouser1024/Airline-Passenger-Satisfaction.git>